

WELD HEADS

FOH 8-40 / 10-76 / 20-114 / 40-168

/ TIG Orbital welding with or without filler wire



/ Open weld heads for mechanized TIG Orbital welding of tube connections (outer diameter 8 - 168 mm / 0.31 - 6.61 in) made of steel, stainless steel, titanium, austenite nickel-chromium-based superalloys, aluminum and other materials in application areas: energy, biochemical industry, food industry, shipbuilding, aerospace and aeronautics etc...

FEATURES

- / FOH weld head including up to 2 sets reducer jaws (depending on weld head type)
- / Integrated servomotor
- / Automatic drive to opening position
- / Free definable starting position
- / Automatic drive stop when overloaded
- / Stepless adjustable clamping-/centering system for quick adaptation to different tube diameters
- / Mechanical tube tracking for constant electrode distance
- / Torch bracket 0 - 45° stepless swivelling
- / Manual side adjustment of the electrode
- / Swivelling torch holder with fixation
- / Plugable control line 6 m (236.22 in)
- / Orbital welding torch with insulated torch body and high duty cycle

- / Ideal gas protection to avoid coloration
- / Torch with comfortable wear part changing system
- / Transport case with trolley-system

ACCESSORIES

- / Orbital welding torch TTGO F++/ 5 m (196.85 in)
- / Orbital welding torch TTWO 2000 F++/ 5 m (196.85 in) (not useable with FOH 8-40)
- / Wear part box for torches
- / Extension hose pack FCH / FOH 10 m (393.70 in)
- / Wire feeder KD 4000 D-11
- / 2-axis wire adjustment
- / Wire feeding (wire-Ø 0,8 - 1,2 mm / 0.03 - 0.05 in)
- / Balancer spring return
- / Orbital system controller FPA 3020/3030



/ Wire feeding, torch bracket from 0 - 45° stepless swivelling



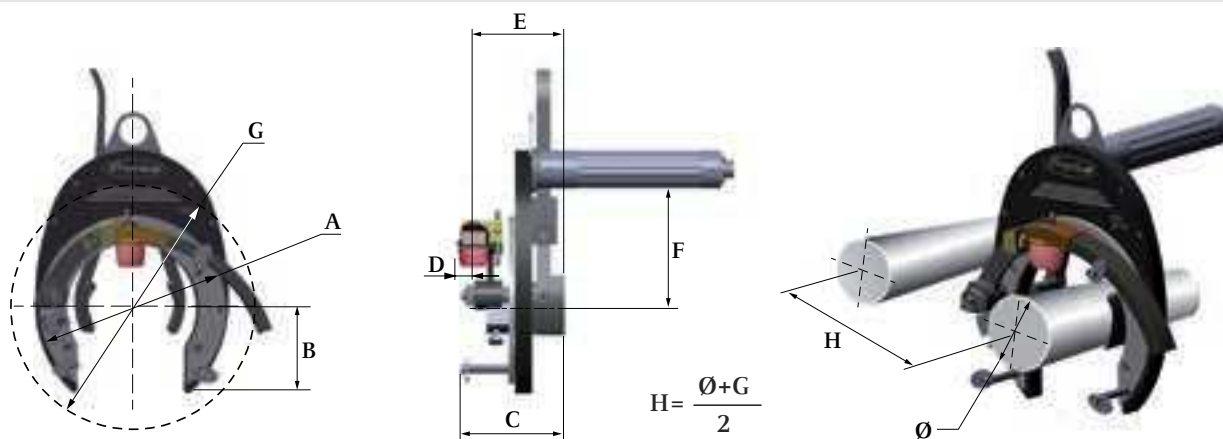
/ Reducer jaws depending on tube outer diameter



/ Transport case with trolley



/ Wire feeder KD 4000 D-11



ORBITAL WELD HEAD	FOH 8-40	FOH 10-76	FOH 20-114	FOH 40-168
Tube outer-Ø	8 - 40 mm (0.31 - 1.57 in)	10 - 76 mm (0.39 - 2.99 in)	20 - 114 mm (0.79 - 4.49 in)	40 - 168 mm (1.57 - 6.14 in)
A	90 mm	142 mm	200 mm	300 mm
B	40 mm (1.57 in)	64 mm (2.52 in)	90 mm (3.54 in)	134 mm (5.28 in)
C	95 mm (3.74 in)	108 mm (4.25 in)	111 mm (4.37 in)	111 mm (4.37 in)
D	7 mm (0.28 in)	7 mm (0.28 in)	7 mm (0.28 in)	10 mm (0.39 in)
E	77 mm (3.03 in)	91 mm (3.58 in)	91 mm (3.58 in)	91 mm (3.58 in)
F	66 mm (2.56 in)	90 mm (3.54 in)	130 mm (5.12 in)	185 mm (7.28 in)
G max.	120 mm (4.72 in)	230 mm (9.06 in)	260 mm (10.24 in)	400 mm (15.75 in)
Net weight (without hose pack)	1,87 kg (4.12 lb)	2,39 kg (5.27 lb)	3,97 kg (8.75 lb)	6,96 kg (15.34 lb)



/ Watch the video on
our YouTube channel.

ORBITAL WELDING TORCH	TTGO	TTWO
Duty cycle	DC 100% 60 A DC 60% 80 A DC 35% 100 A	DC 100% 200 A AC 100% 140 A
Electrode-Ø	2,4 / 3,2 mm (0.09 / 0.13 inch)	2,4 / 3,2 mm (0.09 / 0.13 inch)
Cooling	Gas	Water
Net weight hose pack	1,9 kg (4.19 lbs)	1,9 kg (4.19 lbs)
WIRE FEED	KD 4000 D-11	
Wire speed	0,1 - 11 m (3.94 - 433.07 in) /min	
Wire drive	4-rolls drive	
Standard: Feed rollers Optional: Range of wire-Ø	1,0 H Profi 0,8 - 1,2 mm (0.03 - 0.05 in)	
Wire coils-Ø	max. 300 mm (11.81 in)	
Wire coil weight	max. 16 kg (35.27 lb)	
Type of wire coils	all standardized coils	
Dimensions l/w/h	650 x 290 x 410 mm (25.59 x 11.42 x 16.14 in)	
Weight	15,7 kg (34.61 lb)	

/ Perfect Welding / Solar Energy / Perfect Charging

WE HAVE THREE DIVISIONS AND ONE PASSION: SHIFTING THE LIMITS OF POSSIBILITY.

/ Whether welding technology, photovoltaics or battery charging technology – our goal is clearly defined: to be the innovation leader. With around 3,700 employees worldwide, we shift the limits of what's possible - our record of over 800 granted patents is testimony to this. While others progress step by step, we innovate in leaps and bounds. Just as we've always done. The responsible use of our resources forms the basis of our corporate policy.

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TUBESHEET WELDER FTW 24-120 PRO

/ MIG-MAG

/ Tube inside diameter 24 - 120 mm
(0.9 - 4.7 in)



/ The FTW PRO's range of use contains mainly areas where factors like less time effort, best quality and highest reproducibility are requested. For tube-to-tubesheet joints in heat exchangers or cooling elements these criteria are for utmost importance.

Innovations like the pneumatic clamping system or the hanging device simplify the operators work considerably and additionally decrease the time effort. Precise torch positioning is provided by the 3-point support – even at different tube protrusion.

/ COMPACT AND ERGONOMIC DESIGN

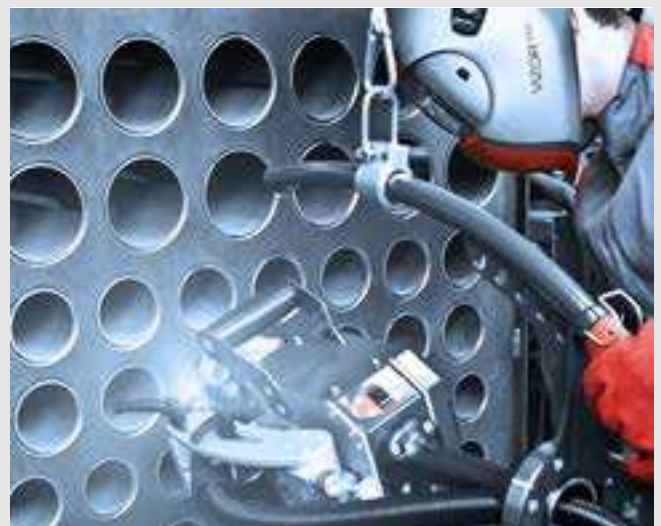
/ HIGHEST QUALITY

/ INCREASED PRODUCTIVITY

/ HIGHER REPRODUCIBILITY

/ TIME SAVINGS DUE TO FAST AND EASY POSITIONING

/ EASY OPERATION



WELDING HEAD FTW 24-120 PRO

FEATURES

- / Pneumatic clamping system
- / Different mandrels and clamping jaws for different tube inside diameters
- / Adjusting units for precise torch adjustments
- / Special torch with multilock and water cooling
- / Hanging device (optional)
- / Comfortable handle for quick-starting of welding programs
- / 3-point support (optional)

HANGING DEVICE (OPTIONAL)

/ For vertical and horizontal welding position. Weightless positioning by using a balancer.

MULTILOCK TORCH

/ Special water-cooled torch with multilock for rapid changing/adjusting of torch elbow (angle available in 20°/30°).



CLAMPING SYSTEM

/ Different mandrels/clamping jaws/support rings with comfortable carrying case. Clamping via pneumatic.



3-POINT SUPPORT (OPTIONAL)

/ Precise torch positioning via pneumatic 3-point support – even with different tube protrusion.



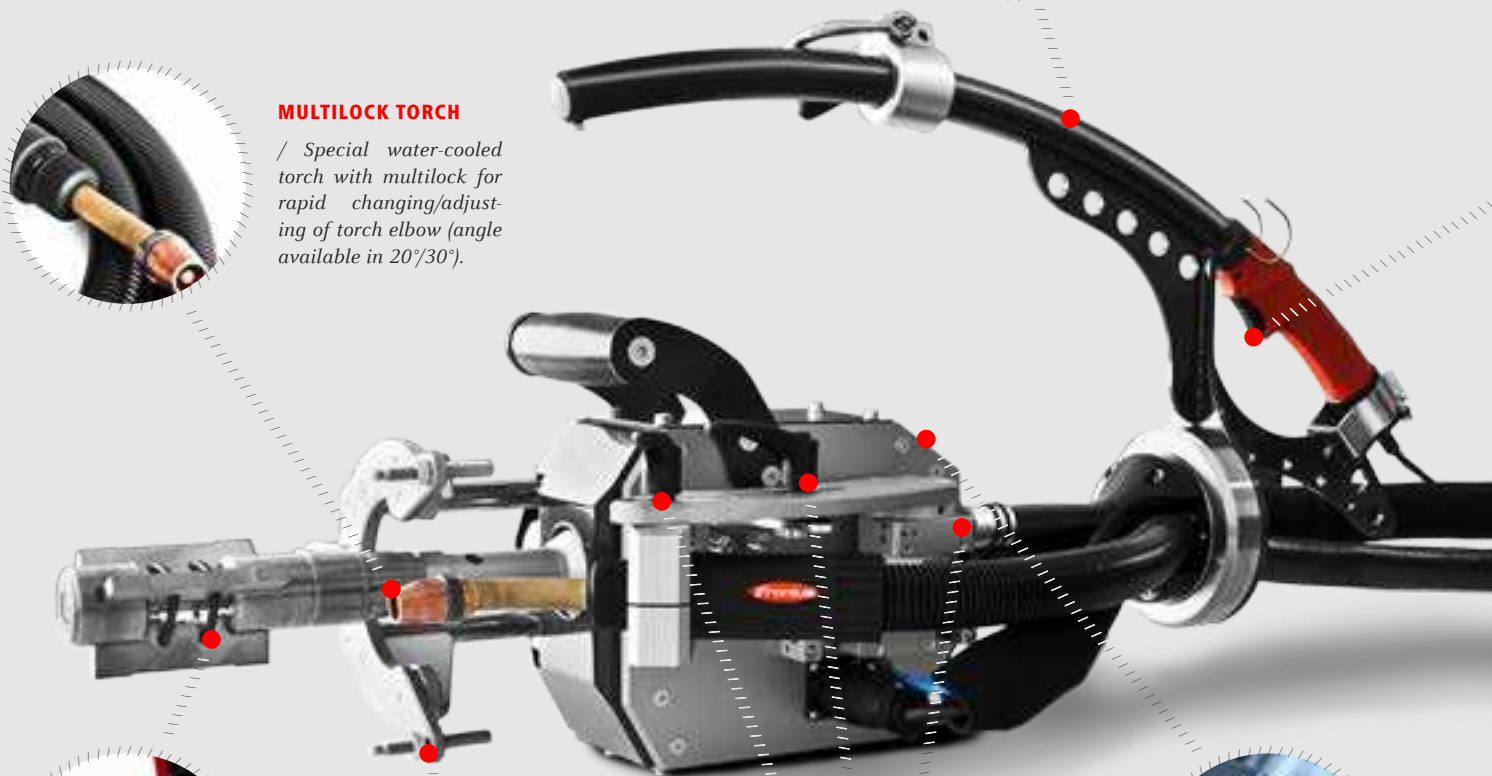
ADJUSTING UNITS WITH FIXTURE

/ Two adjusting knobs and two fixing lever allow perfect torch adjusting.



CLAMPING/ADJUSTING

/ The pneumatic clamping process is simply activated by a slide switch.



CONTROL UNIT FCU/FTW WITH REMOTE CONTROL FRC-40/FTW

FEATURES

- / Robust housing
- / Graphical user interface
- / Touch-display
- / Multifunctional wheel
- / Changeable protective sheets
- / Parameter program- and storable
- / Different languages
- / Job-switching (optional)



HANDLE

/ Ergonomic handle for quick-starting of welding programs. Removable for using without hanging device.



TOUCH-DISPLAY

/ Comfortable operation via touch-display.



MULTIFUNCTIONAL WHEEL

/ Multifunction wheel for selecting and altering parameters – even while the welding procedure is running.



MANDRELS

/ Three mandrels cover tube inside diameters from 30 to 120 mm (1.2 - 4.7 in) - other tube diameters on request.

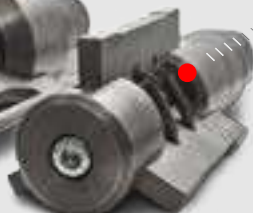


CLAMPING JAWS

/ Each mandrel supports different clamping jaws for different tube inside diameters.



Ø 70 - 120 mm
(2.8 - 4.7 in)



Ø 40 - 80 mm
(1.6 - 3.1 in)



Ø 30 - 54 mm
(1.2 - 2.1 in)



SUPPORT RINGS

/ Support rings for different tube diameters.

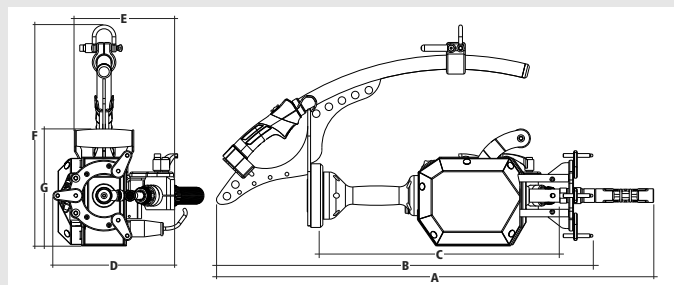
TECHNICAL DATA

FTW 24-120 PRO (WELDING HEAD)	
Tube inside diameter	24 - 120 mm (0.9 - 4.7 in)
Tube protrusion	8 - 35 mm (0.31 - 1.4 in)
Welding process	MIG/MAG
Rotary speed	0 - 10 rpm
Welding position	PA/PB/PG/PF
Weight (without mandrel/torch/hanging device)	9 kg (19.8 lb)
Dimensions	
A	927 mm (36.5 in)
B	798 mm (31.4 in)
C	563 mm (22.2 in)
D	258 mm (10.2 in)
E	205 mm (8.1 in)
F	468 mm (18.4 in)
G	248 mm (9.8 in)

MULTILOCK TORCH/FTW	
Welding current DC 60%/100%	250 A/200 A
Wire diameter	0,8 - 1,2 mm (0.031 - 0.047 in)
Elbow (customer specific angle on request)	20°/30°
Hose package length	2,5/3,5/4,5 m (98.4/137.8/177.2 in)

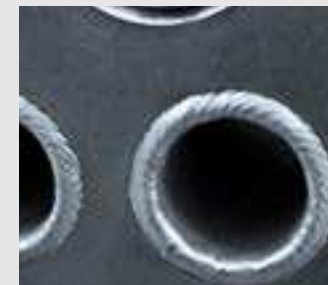
FCU/FTW (CONTROL UNIT)	
Mains voltage, 50 - 60 Hz	230 V
Power consumption	300 VA
Control voltage	36 V DC
Mains cable with plug	5 m (197 in)
Control line for FTW	3 m (118 in)
Control line for power source	3 m (118 in)
Weight	9,7 kg (21.4 lb)

FRC-40/FTW (REMOTE CONTROL)	
Dimension	275 x 195 x 85 mm (10.8 x 7.7 x 3.3 in)
Weight	2,45 kg (5.4 lb)



APPLICATION

/ Protruding tubes-to-tubesheets are welded via fillet weld in PB-position. The special torch with multilock allows a quick 180° rotation of the elbow for welding flush tubes in PA-position (recessed tube welding on request).



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ORBITAL SYSTEM CONTROLLER FPA 3020 AC/DC

/ Orbital welding power source



/ The FPA 3020 Orbital system controller is special designed for FCH and FOH weld heads. Due to its lightweight and compact design it is ideal useable for mobile applications. The integrated system controller controls both the power source and the weld head. This guarantees perfect, 100% reproducible welding quality.

FEATURES

- / Lightweight and compact design - ideal for mobile applications
- / Generator compatible
- / Integrated water cooler with water control
- / Integrated microprocessor-controller
- / Intuitive touch-screen operator panel (colour)
- / Language selection (DE/GB/FR/IT/ES/PB/RU/CZ/TR)
- / Remote control FRC-FPA 3020 with 10 m cable
- / Addressing of welding current, rotation axis, purging gas and external wire feeder
- / Recording of imported heat energy
- / USB interface for data transfer and recording
- / Integrated printer for welding data documentation

FUNCTIONS

- / Save / load up to 200 programs
- / 3 tacking programs (up to 20 tacking points)
- / 10 sectors per programm
- / Start / stop with slope, immediate welding stop
- / Emergency-stop
- / Manual positioning of axes
- / Manual wire inching (forward / reverse)
- / Parameter adjusting during welding (on the fly)
- / Shielding gas and purging gas on / off



/ USB interface



/ Remote control FRC-FPA 3020



/ Carriage PickUp (accessory)

TECHNICAL DATA

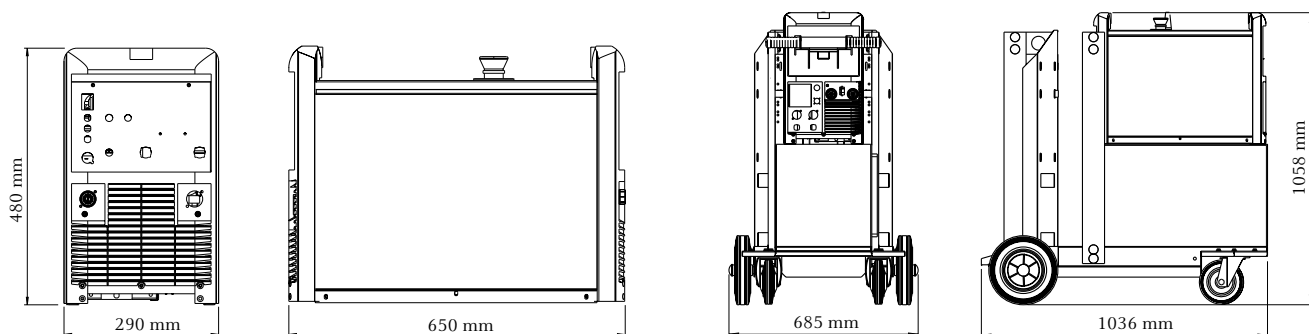
Mains voltage	230 V
Operating voltage	10,2 - 18 V
Open-circuit voltage	44 V
Mains fuse	16 A
Cos phi	0,99
Welding current AC / DC (stepless)	5 - 200 A
Duty cycle	200 A (10 min/40°C) 35% d.c. 145 A (10 min/40°C) 60% d.c. 110 A (10 min/40°C) 100% d.c.
Cooling power (on 40°C, 1l/min)	500 W
Coolant capacity	1,8 l (0.47 US gal)
Coolant throughput	max. 3,0 l/ min (0.79 US gal/min)
Protection class	IP 23
Dimensions l/w/h	650 x 290 x 480 mm (25.6 x 11.4 x 18.9 in)
Net weight (without remote control)	38 kg (83.77 lb)

SCOPE OF DELIVERY

/ FPA 3020 Orbital system controller
/ Remote control FRC-FPA 3020 with cable 10 m
/ USB flash drive 8 GB

ACCESSORIES

/ Software FPA-Xplorer Offline
/ USB flash drive 8 GB
/ Print paper
/ Ground cable
/ Pressure regulator
/ Carriage PickUp
/ KD 4000-D11 wire feeder
/ TIG manual welding torch



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WELD HEADS

FCH 3-21 / 3-38 / 6-76 / 9-114

/ TIG Orbital welding without filler wire



/ Closed weld heads for mechanized TIG Orbital welding of thin-walled tube connections with outer-diameters from 3 - 114 mm (0.12 - 4.49 in) and wall thicknesses up to 3,5 mm (0.14 in) made of stainless steel, titanium, austenite nickel-chromium-based superalloys, aluminum and other materials in application areas: microelectronics, bio-chemical industry, food industry, instrumentation, aerospace and aeronautics, etc.

FEATURES

- / FCH weld head with hose pack 8 m
- / High duty cycles due to top performance watercooling
- / Integrated servomotor
- / Automatic drive to opening position
- / Free defineable starting position
- / Automatic drive stop when overloaded
- / Compact design for use in areas with limited access
- / Protection chamber for gas-covering to avoid coloration
- / Clamping system for easy and fast fixing and centering
- / Quick change system for collets
- / High usability due to integrated control buttons
- / Transport case with trolley-system

ACCESSORIES

- / Collets set for different tube diameters
- / Customized collets
- / Offset electrode holder (FCH 6-76/9-114 only)
- / Stepless adjustable electrode holder (FCH 6-76 / 9-114 only)
- / Extension hose pack FCH/FOH 10 m (393.70 in)
- / Orbital system controller FPA 3020/3030

INTEGRATED BUTTONS



- 1** / LED indicator for 360° limit switch position
- 2** / Start/Stop welding
- 3** / Torch rotation
- 4** / Immediate welding stop
/ Gas- and cooling test



/ Spring loaded clamping system



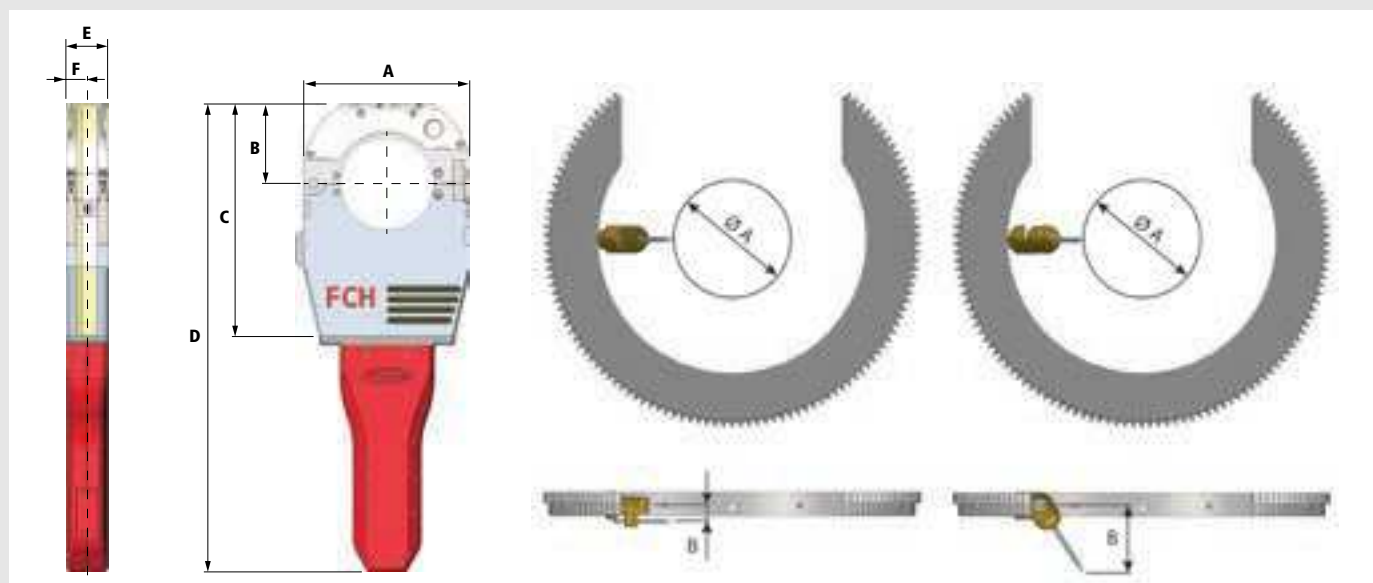
/ Perfect welds due to closed chamber



/ Stepless adjustable electrode holder



/ Transport case with trolley holder



	FCH 3-21	FCH 3-38	FCH 6-76	FCH 9-114
Tube outer-Ø	3-21 mm (0.12-0.83 in)	3-38 mm (0.12-1.49 in)	6-76 mm (0.24-2.99 in)	9-114 mm (0.35-4.49 in)
A	70 mm (2.76 in)	102 mm (4.02 in)	160 mm (6.30 in)	200 mm (7.87 in)
B	36,5 mm (1.44 in)	51 mm (2.08 in)	77 mm (3.03 in)	97 mm (3.82 in)
C	143 mm (5.63 in)	174 mm (6.85 in)	224 mm (8.82 in)	264 mm (10.39 in)
D	358 mm (14.09 in)	389 mm (15.31 in)	453 mm (17.83 in)	493 mm (19.40 in)
E	35 mm (1.38 in)	35 mm (1.38 in)	40 mm (1.57 in)	40 mm (1.57 in)
F	17,5 mm (0.69 in)	17,5 mm (0.69 in)	20 mm (0.79 in)	20 mm (0.79 in)
Electrode position				
Electrode-Ø	1,6 / 2,4 mm (0,06 / 0,09 in)			
Max. temperature of upper clamping shell	100° C (212° F)	100° C (212° F)	100° C (212° F)	120° C (248° F)
Max. current	100 A	150 A	200 A	200 A
Net weight incl. hose pack	5,89 kg (12.99 lbs)	6,45 kg (14.22 lbs)	11,93 kg (26.30 lbs)	13,66 kg (30.12 lbs)

	Offset electrode holder		Stepless adjustable electrode holder	
	maximum Ø A	lateral offset B	maximum Ø A	lateral offset B
FCH 6-76	50,8 mm (2.00 in)	5-7 mm (0.20-0.28 in)	50,8 mm (2.00 in)	variable depend- ing on the
FCH 9-114	88,9 mm (3.50 in)	5-7 mm (0.20-0.28 in)	88,9 mm (3.50 in)	interaction of electrode length, angle and measure

/ Watch the Video on
our YouTube channel.



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THREE BUSINESS UNITS, ONE GOAL: TO SET THE STANDARD THROUGH TECHNOLOGICAL ADVANCEMENT.

What began in 1945 as a one-man operation now sets technological standards in the fields of welding technology, photovoltaics and battery charging. Today, the company has around 4,760 employees worldwide and 1,253 patents for product development show the innovative spirit within the company. Sustainable development means for us to implement environmentally relevant and social aspects equally with economic factors. Our goal has remained constant throughout: to be the innovation leader.

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ORBITAL SYSTEM CONTROLLER FPA 3030

/ in combination with Fronius TIG power source
and cooling unit.



/ The microprocessor-controlled system controller runs open and closed orbital weld heads for tube-tube, tube-flange and tube-tubesheet welding. Application area is microelectronics, pharmacy/biochemistry, food industry, aeronautics/aerospace, heat exchanger manufacturing, shipbuilding, power engineering and climate technology, etc...

STANDARD EQUIPMENT

- / FPA 3030, mounted on carriage
- / Generator compatible, supply via power source
- / Integrated digital gas sensor
- / Built-in printer prints 40 characters per line
- / 1 pc. USB stick 8 GB
- / Remote control FRC-FPA 3030 with cable
10 m (393.7 in)
- / Easy programming via intuitive program interface
- / Remote diagnosis via internet
- / Touch screen operation contains graphical process
visualisation (colour)
- / Language selection (De/Gb/Fr/It/Es/Pb/Ru/Cz/Tr)
- / Load and save programs to USB-stick
- / Addressing torch rotation axis with encoder / digital
welding parameters / wire feeder / purging gas
- / Backup creation on USB stick
- / Welding data documentation on USB stick
- / SynergicMode (material, pipe outside-Ø,
wall thickness, gas, ...)
- / Auto-diagnostic system (error-code)
- / Ethernet and RS232 interface for service

WELDING PARAMETERS

- / Save/load up to 200 programs possible
- / 3 special tack programs with up to 20 tack points

- / 10 sectors/program freely definable

FUNCTIONS

- / Program selection
- / Start/stop with slope, immediate weld stop
- / Emergency-stop
- / Manual positioning of axes
- / Manual wire inching (forward/reverse)
- / Parameter adjusting during welding (on the fly)
- / Shielding and purging gas on/off



/ open and closed weld heads FOH / FCH in use

OPTIONS AND ACCESSORIES

/ Software FPA Xplorer for offline-mode
(data documentation and -archiving)
/ TIG power source, cooling unit, cold wire supply
/ Carriage PickUp
/ Orbital weld heads FOH (open), FCH (closed)
/ Hosepack extension
/ 1 roll of printer paper FPA 3020/3030
/ 1 pc. USB stick Kingston 8 GB

DISPLAY DURING WELD CYCLE

/ Welding current (A)
/ Arc voltage (V)
/ Torch position (degree)
/ Welding speed (cm, in/min)
/ Wire feed speed (cm, in/min)
/ Heat input (kJ)

TECHNICAL DATA

SYSTEM CONTROLLER	FPA 3030	COOLING UNIT	FK 2500 ROB	
Nominal current	4 A	Cooling capacity at 40C / 25C and 1l / min	500 / 800 W	
Power consumption	220 VA	Max. flow rate, max. pump pressure , max. delivery altitude	3,5 l/min, 4 bar, 30 000 mm (1181.1 in)	
Control voltage	24 V	Mains voltage (+/- 10%) / line frequency	400 V / 50-60 Hz	
Motor voltage	24 V	Coolant content	4 l	
Mains voltage (via welding power source)	55 V	Protection class	IP23	
Protection class	IP 23	Weight	9 kg (19.8 lb)	
Dimensions l/w/h	500 x 390 x 320 mm (19.7 x 15.3 x 12.6 in)	Magnetically coupled rotary pump	yes	
Net weight without remote control	15 kg (33 lb)	Thermo Monitoring	yes	
		Flow Sensor	yes	

POWER SOURCES	TRANSTIG 2500 JOB	TRANSTIG 3000 JOB	MAGICWAVE 2500 JOB	MAGICWAVE 3000 JOB
Welding current range	3-250 A (DC)	3-300 A (DC)	3-250 A (AC/DC)	3-300 A (AC/DC)
Open circuit voltage	85 V	81 V	89 V	89 V
Working voltage range	10,1 - 20 V	10,1 - 20 V	10,1 - 20 V	10,1 - 22 V
Protection class	IP23	IP23	IP23	IP23
Mains fuse	16 A	16 A	16 A	16 A
Mains voltage [+/- 10%]	3 x 400 V	3 x 400 V	3 x 400 V	3 x 400 V
Welding current / Duty [10 min/40C]	210 A / 100 %	240 A / 100 %	180 A / 100 %	200 A / 100 %
Welding current / Duty [10 min/40C]	240 A / 60 %	300 A / 50 %	210 A / 60 %	250 A / 60 %
Welding current / Duty [10 min/40C]	250 A / 50 %	300 A / 45 %	250 A / 40 %	300 A / 35 %
Weight	24,2 kg (53.35 lb)	24,2 kg (53.35 lb)	26,6 kg (58.64 lb)	28,1 kg (61.95 lb)

/ Perfect Welding / Solar Energy / Perfect Charging

WE HAVE THREE DIVISIONS AND ONE PASSION: SHIFTING THE LIMITS OF POSSIBILITY.

/ Whether welding technology, photovoltaics or battery charging technology – our goal is clearly defined: to be the innovation leader. With around 3,300 employees worldwide, we shift the limits of what's possible - our record of over 900 granted patents is testimony to this. While others progress step by step, we innovate in leaps and bounds. Just as we've always done. The responsible use of our resources forms the basis of our corporate policy.

Further information about all Fronius products and our global sales partners and representatives can be found at www.fronius.com

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